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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09 903,764

07 13 2001

Taizo Oku

1463

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GEORGE A. LOUD
3137 MOUNT VERNON AVENUE
ALEXANDRIA, VA 22305

EXAMINER

DANG, TRUNG Q

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 06 18 2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,764

Applicant(s)

OKU ET AL

Examiner

Trung Q. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-5 and 8-21 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-5, 8, 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-4, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Maeda et al. (U.S. Pat. No. 5,554,570 of record).

The reference clearly teaches every limitation of the claimed invention in which it discloses a film forming method comprising the steps of: preparing a film forming gas selected from a group consisting of trimethoxysilane (TMS) and tetramethyldisiloxane (TMDSO) and any one oxygen-containing gas selected from a group consisting of O₂, N₂O, NO₂, CO, CO₂, and H₂O; forming a silicon-containing insulating film 15 by plasma enhanced CVD; and forming an interlayer insulating film 16 by thermal CVD (coating) on said silicon-containing insulating film 15 (Fig. 2D). See the first and third embodiments and claim 8. Note that although Maeda does not specifically disclose that the silicon-containing insulating film 15 is a barrier insulating film as claimed, such property of the film 15 is held inherent because the claimed barrier insulating film and Maeda's insulating film 15 are deposited by identical process, absent evident to the contrary.

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It is also noted that Maeda's invention is to improve the step coverage of an inherent low moisture permeability (i.e., moisture barrier) of a silicon-containing insulating film formed by plasma CVD method of prior art (col. 1, lines 10-15). Thus, it is evident that Maeda's silicon-containing insulating film 15 is also possessing the moisture permeability property.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda in view of Saito et al. (JP 08-236518 of record).

Maeda teaches a process as noted above. Maeda differs from the claim in employing argon as a carrier gas for the TMS (col. 8, lines 44- 47) instead of nitrogen as claimed .

However, Saito teaches nitrogen as an alternative carrier gas for TMS (see paragraph [0009]).

The subject matter as a whole would have been obvious to one having ordinary skilled in the art to have replaced argon with nitrogen as a carrier gas because the substitution of art recognized equivalent as shown by Saito would have been within the level of an artisan.

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3. Claims 1, 2, 3, 5, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Saito et al. (JP 09-134910 of record).

The reference clearly teaches the claimed invention in which it discloses a film forming method comprising the steps of: preparing a film forming gas comprising a trimethoxysilane (TMS), an oxygen gas, a nitrogen gas; forming a silicon-containing insulating film 1003 by plasma enhanced CVD; and forming an interlayer insulating film 1004 by CVD (coating) on said silicon-containing insulating film 1003 (see Fig. 10b, paragraph [0036] and claim 17). Note that the silicon-containing insulating film 1003 is water resistance (paragraphs [0012], [0014]), hence it is a barrier insulating film.

As for claim 2, see Table 1 for the carrier gas of nitrogen added to the TMS.

As for claim 5, the reference teaches the use of 2 cycle excitation CVD which impresses a RF (13.56 MHZ) to the upper electrode, and impresses a RF (400 kHz) to the lower electrode. See paragraph [0019] and claim 13.

4. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda as above.

Maeda teaches a process as noted above. Maeda differs from the claim in not disclosing the N₂O/TMS ratio as claimed. However, absent a showing of criticality by applicant, the selection of the claimed N₂O/TMS ratio would have been obvious to one of ordinary skill in the art since it has been held that, where the general conditions of a claim are disclosed in the prior

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art, it is not inventive to discover the optimum or workable range by routine experimentation. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Sola 25 USPQ 433 (CCPA); In re Waite 77 USPQ 586 (CCPA).

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is dependent on cancel claim 6.

Claim 21 is confusing as to where the porous insulating film or a SiOF film is formed because the dependent claim 21 does not further restrict the parent claim as required by 37 C.F.R. 1.75 (c). See M.P.E.P. 608.01(n).

6. Applicant's arguments with respect to claims 1-5 and 19-21 have been considered but are moot in view of the new ground(s) of rejection.

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7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

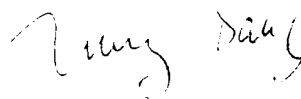
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is (703) 308-2548. The examiner can normally be reached on weekdays from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794. The fax phone number for this Group is (703) 305-3432 or (703) 308-7725.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in cursive script, appearing to read "Trung Dang".

Trung Dang

Primary Examiner, Group 2800